



University of Pennsylvania Working Papers in Linguistics

Volume 11 | Issue 1

Article 3

1-1-2005

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BRIDGET COPLEY

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Bridget Copley

1 Introduction

A *futurate* is a reading of a sentence with no obvious means of future reference, which nevertheless has a future-oriented eventuality. Futurates in addition carry a flavor of a plan or schedule (in some sense to be made more precise).¹ The sentences in (1) and (2) are examples of futurates. The (a) examples, which discuss a plannable event (a baseball game), are far more acceptable than the (b) examples, which refer to a presumably unplannable event (the Red Sox's winning).

- (1) a. The Red Sox play the Yankees tomorrow.
b. # The Red Sox defeat the Yankees tomorrow.
- (2) a. The Red Sox are playing the Yankees tomorrow.
b. # The Red Sox are defeating the Yankees tomorrow.

The (a) examples convey, roughly, that there exists a plan for the Red Sox and the Yankees to play tomorrow; the (b) examples, however, are decidedly odd. By comparison, there is nothing odd about (3):²

- (3) The Red Sox will defeat the Yankees tomorrow.

The oddness of (1b) and (2b), as compared to (3), seems to stem from the fact that the winner of a baseball game is (usually) not decided ahead of time. The sentences in (1b) and (2b) improve markedly in a context where it is presupposed that the winner *can* be decided ahead of time, for instance, if we are allowed to consider the possibility that someone has fixed the game.

As can be seen in (1) and (2), in English both simple and progressive forms can have futurate construals. While there are differences between the meanings of these forms, they share a great deal. In this paper I will concentrate on the meaning of progressive futurates; see Copley (2002) for an analysis of the differences between simple and progressive futurates.

¹Early work on futurates includes Prince (1971); Lakoff (1971); Vetter (1973); Huddleston (1977), and Dowty (1979). See Binnick (1991) for an overview. More recent efforts are in Landman (1992), Portner (1998), Cipria and Roberts (2000), and Copley (2002).

²Yankees fans often report that (3) does seem a little odd to them, but the facts (www.mlb.com) suggest that this is just wishful thinking.

2 An Initial Hypothesis and its Problems

Consider again the futurate contrast in (2), repeated below as (4).

- (4) a. The Red Sox are playing the Yankees tomorrow.
b. # The Red Sox are defeating the Yankees tomorrow.

As noted above, the sentence in (4a) seems to say that there is a plan for the Red Sox to play the Yankees tomorrow. But is this plan “just” somehow part of the pragmatics, or can a case be made for putting some formal representation of the plan in the semantics of (4a,b)?

It seems that the existence of a plan in futurates matters, at the very least, to temporal predicates; the time over which the plan is asserted to hold is constrained by tense and can also be constrained by a temporal adverbial. The utterance in (5) seems to convey that at some time in the past, for a period of two weeks, there was a plan for the Red Sox to play the Yankees today.

- (5) For two weeks, the Red Sox were playing the Yankees today.

The semantics of futurates will thus need to refer to at least the duration of the aforementioned plan. But what is the nature of the reference to the plan? Let us suppose, as an initial hypothesis, that a plan, as far as the grammar is concerned, is simply the conjunction of future-oriented propositions. For now, I will not venture to say what might make any old conjunction of future-oriented propositions a plan. At least the propositions ought to be consistent with each other, for example. But let us suppose, for now, that whatever else makes a plan a plan, it is not manipulated by the semantics, but only lives in the pragmatics. This supposition will, incidentally, turn out to be incorrect.

If propositions are sets of worlds, we can define a plan as the joint intersection of a set of type $\langle w, t \rangle$ propositions p , where each of these propositions is equal to a type $\langle i, \langle w, t \rangle \rangle$ proposition q applied to a future time.

- (6) Definition of planhood (initial try):

X_{wt} is a plan in w at t if

$$X_{wt} = \bigcap \{ p : p \in D_{\langle w, t \rangle} \ \& \ \exists q \in D_{\langle i, \langle w, t \rangle \rangle} : [\exists t' > t : [p = q(t')]] \}$$

A plan then provides for p just in case all worlds in the plan are also in p .

- (7) $\forall p \in D_{\langle w, t \rangle}, X_{wt}$ provides for p iff $\forall w'$ such that $w' \in X_{wt} : [p(w')]$

We then define a futurate operator OP , as in (8) below, that takes a proposition, a world, and a time, and asserts that at that world and time there is a plan that provides for p .

(8) $OP = \lambda p \lambda w \lambda t . \exists X_{wt} : X_{wt} \text{ provides for } p$

This, then, is our initial hypothesis for the meaning of futurates. Of course it is not this easy; there turn out to be a number of problems with this hypothesis.

2.1 Problem #1: The Status of the Plan

The first problem is that futurates do not really seem to *assert* the existence of a plan that provides for p ; for if they did, we would expect (9a) to mean that there does not exist a plan for the Red Sox to play the Yankees tomorrow. But this meaning is not quite right. Suppose that Major League Baseball has not yet decided who plays whom tomorrow. Then clearly, neither (9a) nor (9b) is felicitous.³

- (9) a. The Red Sox aren't playing the Yankees tomorrow.
b. The Red Sox are playing the Yankees tomorrow.

So futurates apparently exclude the middle: in the case where there is no particular plan with anything to say about the Red Sox playing the Yankees, neither (9a) nor (9b) are felicitous. This is in conflict with the proposed meaning for futurates, in which the negation ('There does not exist a plan for the Red Sox to play the Yankees tomorrow') is felicitous in exactly this middle case.⁴

One possible solution to the problem in (9) would be to interpret negation below the futurate operator OP . Then (9a) would be predicted to mean something like 'The Red Sox are planned to not play the Yankees tomorrow.' But while this solution works for (9a), it is unavailable for biclausal cases such as (10), which exhibit exactly the same problem.

- (10) I doubt that the Red Sox play the Yankees tomorrow.

What (10) seems to mean is that the speaker doubts that the plan provides for the Red Sox playing the Yankees tomorrow. That is, the speaker is of the opinion that the plan provides for the Red Sox to not play the Yankees

³Whether this judgment actually is one of felicity conditions or truth value is an open question. I will assume that futurates do not get truth values until the eventuality in question either comes about or fails to come about. However, the judgments seem to have the robustness of truth value judgments, and indeed, elsewhere (Copley, 2002) I have treated them thus. Since Aristotle's *Physics* this issue has been central to the discussion of future contingents; I will not attempt to treat it at length here.

⁴For more on the Law of the Excluded Middle, see van Fraassen (1966) and Thomason (1970).

tomorrow. So again, the middle is excluded, but the option of interpreting the embedded-clause futurate operator over the matrix clause *doubt* is unavailable.

So *p* is either entailed by the plan, or inconsistent with the plan, but it cannot be merely consistent with it. What this fact suggests is a presupposition that the plan provides either for *p* or for not-*p*; that is, that a *p*-eventuality is the sort of thing that is either planned to happen or planned to not happen. This idea explains the judgments in (11) in terms of a presupposition failure (a failure that is ameliorated if we suppose that the eventualities in question are, in fact, part of someone's plan).

- (11) a. # The Red Sox are defeating the Yankees tomorrow.
 b. # It's raining tomorrow.

It is not yet clear where this presupposition would fit in compositionally. I will raise this question again below, as the solution to the second problem will prove relevant.

2.2 Problem #2: Speaker Confidence

The second problem with the initial hypothesis is that futurates commit the speaker to the belief that the eventuality in question will in fact occur, as shown in (12a).⁵ This would be surprising under our initial hypothesis, as there is no problem with asserting, as in (12b), that there is a plan that provides for *p* but you don't think it will happen.

- (12) a. # The Red Sox play the Yankees tomorrow, but they won't/might not.
 b. There is a plan for the Red Sox to play the Yankees tomorrow, but they won't/might not.

If the assertion of the futurate in (12a) really is just that the plan exists, it is not clear why spelling it out that there is a plan, as in (12b), should be any different. Yet the futurate shows a conflict with denying that the eventuality will happen, while the explicit assertion that there is a plan does not. Our initial hypothesis cannot account for this difference.

Could this problem be solved by adding as part of the assertion contributed by the future operator, an assertion reflecting speaker confidence that the plan will be realized? (This wouldn't mean that the plan would *actually* have to be realized, merely that the speaker would be asserting that it would

⁵This fact seems not to have been discussed in the literature prior to Copley (2002), and indeed I know of no other analyses that can account for it.

be.) It turns out that this move will not work. In past tense futurates, the realization of the plan doesn't seem to be part of the assertion, as shown below in (13). Past tense futurates do not commit the speaker to the belief that the plan was or will be realized.⁶

- (13) The Red Sox were playing the Yankees tomorrow, but now they won't.

So assertion of the realization of the plan is apparently not an option for explaining the contrast in (12).

3 Getting Smarter about Plans

What went wrong with the proposed meaning for futurates? Consider the problematic examples again.

- (14) a. # I doubt that the Red Sox are playing the Yankees tomorrow.
b. # The Red Sox are playing the Yankees tomorrow but they might not.

The first problem is that (14a) appears to have a presupposition that the eventuality be of a kind that could, in principle, be planned. The second problem, the unacceptability of (14b), seems to indicate that the speaker of a futurate has some high level of confidence that the future eventuality will happen.

In order to solve these problems, we will need to know something more about plans than that merely they are sets of future-oriented propositions. This is clearest in the case of the first problem; we apparently need to care whether or not a p-eventuality is something that *could* be planned. Some eventualities can be planned, it seems, and some can't, and this is relevant. Since any future-oriented proposition trivially *could* be included in a set of future-oriented propositions, we must have a more restrictive definition of what it is to be a plan.

In the second problem, too, this issue arises. Above I have argued that the speaker confidence cannot be part of the assertion of a futurate. Suppose instead that the confidence is a presupposition, that the speaker of a futurate presupposes that the eventuality will actually happen. But this too does not

⁶Here is one case where progressive and simple futurates differ; simple futurates are extremely marked, if not impossible, in the past tense:

i. #The Red Sox played the Yankees tomorrow.

These past simple futurates do improve under sequence of tense and in narrative contexts, but the contrast is very striking.

seem right, as Vetter (1973) argues. If there were such a presupposition, the sentence in (14b) would deny its own presupposition, because the presupposition of the embedded clause would also be a presupposition of the matrix. Consider (15), for example:

(15) I doubt that John has quit smoking.

The matrix clause, like the embedded clause, presupposes that John smoked at one time; this property is a general property of attitude sentences (Karttunen, 1974; Heim, 1992). Vetter argues that the same kind of presupposition projection is at work in (10), repeated below as (16).

(16) I doubt that the Red Sox are playing the Yankees tomorrow.

Thus the sincere utterer of (16) would doubt whether the Red Sox would play, but presuppose that the speaker was sure that they would play.

Likewise, a putative presupposition of speaker confidence would be totally inappropriate for futurate questions, as in (17). We certainly would not want the speaker of (17) to be presupposing that the Red Sox are playing the Yankees tomorrow.

(17) Are the Red Sox playing the Yankees tomorrow?

Therefore, following Vetter, I conclude that a presupposition of speaker confidence is not the correct presupposition for futurates.

The appropriate presupposition, rather, seems to be a conditional one: the speaker is certain that *if* the plan says the Red Sox play the Yankees tomorrow, they will. This can be both a presupposition of the embedded clause and the matrix clause without contradiction, and it would yield the correct judgments. Furthermore, a conditional presupposition of this sort would also solve the first problem. Recall that there seemed to be a presupposition that either *p* is planned or not-*p* is planned. This presupposition would be subsumed under a conditional presupposition. So a conditional presupposition seems correct.

(18) *Conditional presupposition*: If *p* is planned, *p* will happen.

But if that is so, again we must specify more about the plan than we have so far been willing to do. If a plan is just a set of future-oriented propositions, then futurates should be able to vary as to whether their plans consist only of propositions describing eventualities that will actually turn out to happen, or only of those that will not turn out to happen, or a combination of both. Thus there should be no conditional presupposition, and no excluded middle. But

this conclusion contradicts the observed facts. Therefore, once again, we need a more restrictive definition of a plan than merely an arbitrary set of future-oriented propositions.

So how does this conditional presupposition of futurates arise from more plausibly primitive semantic objects? Let's consider our intuitions about plans.

4 Intuitions about Plans

If we consider what we know about plans aside from their being sets of future-oriented propositions, we might come up with the following three initial intuitions:

1. *A certain entity has a desire for the plan to be realized.*
2. *The entity has the ability to see that the plan is realized.*
3. *Plans can change, since desires and abilities can change.*

I take these intuitions, without argument, to be a reasonably good starting point. Unpacking them will motivate our theory of plans in more familiar semantic terms.

4.1 On Being Committed

The first intuition on the list is that the person making the plan for *p* must somehow want *p* to happen. However, an entity can have a plan and intend to carry it out, seemingly without actually wanting to, as in (19).

(19) I'm doing laundry tomorrow, even though I don't want to.

Is there a problem, then, with the naive intuition?

I think we can safely say that there is no substantive problem here, on the strength of Kratzer's discussion of a parallel issue (Kratzer, 1991). Here is a version of Kratzer's point. Suppose that I only have enough clean clothes to make it through tomorrow. Suppose also that the propositions in (20) are true.

- (20)
- a. I want to have clean clothes.
 - b. I don't want (= want not) to do my laundry.
 - c. I don't want to (= want to not) have someone else do my laundry.
 - d. I don't want to (= want to not) buy new clothes.

Assuming that the only ways I am going to get clean clothing are by washing my clothes myself, having someone else do it for me, or buying something new

to wear, then there is no world in which all of the desires expressed in (20) are true because taken together they are contradictory. And yet the desires in (20) are perfectly natural simultaneous desires.

The introduction of gradable modality into the modal framework allows us to model contradictory desires such as those in (20). The idea is that my desires in (20) — and desires in general — do not all have equal weight. In the present instance, suppose that above all else I would like to avoid buying new clothes. Next most important to me is to avoid having someone else do my laundry. Having clean clothes is my next priority, and avoiding doing the laundry myself is least important. In such a scenario, it is obvious that my best course of action is to resign myself to doing my laundry. Thus the utterance in (21) expresses a true proposition.

(21) I should do laundry tomorrow, even though I don't want to.

Now we alter the theory of modals to get (21) to turn out true. In Kratzer's terminology, the conversational background consisting of the propositions expressed in (20) provides an *ordering source* on the accessible worlds being quantified over. The ordering source partitions the worlds into sets, and ranks them according to how well they agree with the conversational background. In our case, for instance, worlds in which I do my own laundry are the best possible worlds; worlds in which I buy new clothes so I can have something to wear tomorrow, are the worst.

The modal *should* is approximated by universal quantification over not the set of accessible worlds, but the set of best accessible worlds. On all those worlds, I do my laundry. Thus the reason that (21) comes out true is not that my desires are not involved in the evaluation of the *should* clause, but that *should* takes into account my "net" desires, while *want* does not.

This mechanism works equally well to explain why (19) is true, not contradictory. We might therefore revise the statement of the intuition to say that the following is true of an entity making a plan for p: p is true in all the worlds that are optimal according to an ordering source given by the entity's desires. Let's call net desires *commitments*. Then a fact about an entity's plan for p is that p is true on all the worlds consistent with the entity's commitments.

4.2 On Ability

The second intuition about plans was that the entity making the plan, if it is a valid plan, has the ability to see that the plan is realized. To demonstrate the role of this claim, suppose that my five-year-old cousin Max utters the sentence in (22a) and his mother Chelsea says the one in (22b).

- (22) a. We're seeing Spiderman tomorrow.
 b. We are not seeing Spiderman tomorrow.

Max is clearly mistaken in uttering (22a). What is not clear from what I have told you is which of two mistakes he is making. He could be making a mistake about his mother's commitments, still accepting that she is the one with the ability to determine which movie the family will see. In that case, he will probably correct his belief upon hearing what his mother has to say on the subject.

On the other hand, being a five-year-old, he could equally be under the misapprehension that he has the authority to make plans for the family. On that scenario, he wants to see Spiderman (that is, he is committed to it), and believes that he has the ability to make that happen, so that his mother's comment may well not change his belief.

But it is Chelsea and not Max, of course, who really has the ability to say what the family does. For a certain class of eventualities, if she wants an eventuality to happen, it happens. And equally, if she doesn't want an eventuality to happen, it doesn't happen. What Mom says, goes, or at least, is presupposed to go.

4.3 On Changes

But plans do not always get realized. One way they might fail to be realized is because the person doing the planning might change their mind. The other way is because their abilities might change; i.e., the best laid schemes of mice and men might go, as they so often do, awry. We may presuppose that Mom has the ability to say what goes, but it can happen that somewhere along the way, something unexpected, and more powerful, disrupts her plans. Chelsea may, for example, utter the sentence in (23), but if there are flash floods and they cannot get to the theater the next day, what she ordained did not happen.

- (23) We're seeing Scooby Doo tomorrow.

This kind of thing happens now and then. It does not shake our belief in Chelsea's authority as a mother if there happens to be a flash flood just as they start out for the movie theatre. We still want to presuppose that what Mom and Dad say about certain events, goes, all else being equal.⁷ This kind of

⁷What if Mom and Dad disagree? If they are really sharing control they probably won't talk about the possible options using futurates. The reader can verify this by trying some futurates on his or her significant other.

ceteris paribus restriction on the possible worlds being considered is a familiar one, seen throughout the modal literature (e.g., Stalnaker, 1968; Lewis, 1986; Kratzer, 1991). Dowty (1979) invokes it for progressives by delimiting a set of “inertial worlds,” which is roughly the set of worlds on which things proceed normally. This restriction also applies to commitments: we assume that they will not change, even though we recognize that they could.

5 Proposal

Now we will incorporate the three intuitions discussed above into the semantics of futurates. Recall once more the examples that were problematic for our initial hypothesis for furate meaning:

- (24) a. # I doubt that the Red Sox are playing the Yankees tomorrow.
 b. # The Red Sox are playing the Yankees tomorrow but they might not.

The initial semantics for the example in (24a) appeared to be lacking a presupposition to cause the observed presupposition failure, and the example in (24b) was mysteriously contradictory. I attributed these problems to an inadequate understanding of plans. I showed this in part by showing that the example in (24a) indicated that something like the conditional in (25) was needed as a presupposition, to account for the contradictory nature of (24a).

- (25) *Conditional presupposition*: If *p* is planned, *p* will happen.

(25), of course, could be stipulated, but we wanted to know whether it followed from some more basic properties of plans.

The intuitions fleshed out above regarding the entities behind the plans will now prove to be of use in augmenting our representation of plans to account for (24a) and (24b). Before we start, let us agree to call the entity who makes a plan a *director*. As we have seen, the director need not be the subject of the sentence; for now, let’s suppose that a director is supplied contextually. Directors must be animate; they may also be plural individuals (e.g., Major League Baseball and Max’s parents both qualify as possible directors).

A director for a proposition *p*, according to the intuitions detailed above, has at least two properties: the ability to ensure that *p* happens, and the commitment to seeing that it does happen. I would like to propose that, in futurates, the former property is attributed to the director in a presupposition, and that the latter property is attributed to the director in the assertion, as stated informally in (26).

- (26) a. Presupposition: The director has the ability to ensure that *p* happens
 b. Assertion: The director is committed to *p* happening

In effect, the presupposition in (26) is a restatement of what I called the conditional presupposition, given above in (25). If it is presupposed that the contextually-supplied director has the ability to see that the eventuality is carried out, presupposition failure will rule out utterances such as *The Red Sox are defeating the Yankees tomorrow*, cases where we assume there could not be such a plan. This is as desired.

The second problem is also solved. The reason (24b) is a contradiction, on this proposal, is that the second conjunct contradicts an entailment of the first conjunct. The utterer of *The Red Sox are playing the Yankees tomorrow* presupposes that the plan for them to do so is made by someone who has the ability to see that such a plan is carried out (Major League Baseball, in this case). Combined with the assertion that there is such a plan, it is entailed that the plan will come to fruition. Thus it feels like a contradiction for the speaker to continue on to assert that it might not. However, if past tense affects the temporal location of both the director's commitments and the director's abilities, we still correctly predict that it is not contradictory to say (27).

- (27) The Red Sox were playing the Yankees tomorrow, but then Major League Baseball changed its mind.

This is because we are only making a statement about what an entity's commitments and abilities were at some time in the past. Since either of these could have changed since then, the speaker is not committed to the belief that the eventuality did or will happen.

At this point, we have a hypothesis about both the assertion and presupposition of futurates. To formalize it, let us define *d directs p in w at t* to capture the notion of the ability to make a valid plan, for use in presuppositions of futurates. This ability is the ability to ensure that, if *d* is committed to *p*'s happening, *d* will happen. (Note that this formulation is quite similar to the conditional presupposition above.) The antecedent includes all cases where *p* is true on all the worlds in which *d*'s commitments are satisfied; we discussed this earlier. The consequent, however, we have not discussed. How to express what will actually turn out to happen is not clear. It could be a metaphysical modal base with an empty ordering source, or a single future. We do not have any way to decide between these alternatives here, so I will just use the former

option. Here, then, is a formal definition of direction.⁸

- (28) An entity *d* *directs* a proposition *p* in *w* at *t* iff:
 $\forall w', d$ has the same abilities in w' as in w :
 $[\forall w''$ metaphysically accessible from w' at t and consistent
 with d 's commitments in w' at t :
 $[\forall w'''$ metaphysically accessible from w at t :
 $[\exists t' > t: [p(w'')(t')] \Leftrightarrow [\exists t'': > t: [p(w''')(t'')]]]]]$

What this definition does is to take a set of worlds and say that there is a subset of that set, such that all the worlds in the subset agree with all the worlds in the larger set on a certain property.⁹ The larger set is the entire set of metaphysically possible worlds, while the subset is the set of worlds consistent with the director's commitments (but still metaphysically accessible). The property is the property of there being some future time at which *p* is true on the world in question. Thus, whether the director's commitment-worlds have the property determines whether the entire set of metaphysically possible worlds has that property or not.¹⁰ That is, what the director says, goes (or at least, is presupposed to go).

The presupposition of futurates is then simply the presupposition in (29):

- (29) *Direction presupposition*: *d* directs *p* in *w* at *t*

The assertion is, still, that the future-oriented proposition *p* is consistent with *d*'s commitments, i.e., maximally consistent with *d*'s desires, in *w* at *t*.

- (30) *Commitment assertion*: *d* is committed to *p* in *w* at *t*

And the meaning we want for the futurate operator is as follows.

- (31) $OP(d)(p)(w)(t)$ is defined iff *d* directs *p* in *w* at *t*. If defined,
 $OP(d)(p)(w)(t) = 1$ iff *d* is committed to *p* in *w* at *t*.

⁸For reasons of space, not to mention complexity, I will not further formalize the notions of commitment and ability.

⁹The double restriction to metaphysically accessible worlds is not redundant. Suppose, for instance, that *d* wants *p* and also wants not-*p*, and only *p* is metaphysically possible. If we were considering all of *d*'s desire-worlds, *d* would not have an opinion about *p*. But intuitively, *d* does have an opinion about *p* in such a case.

¹⁰It is here that the Law of the Excluded Middle is incorporated: The worlds must all agree, whether on *p* or on not-*p*.

6 Conclusions and Further Questions

In this paper, I have presented a denotation for a futurate operator that solves two problems of futurate meaning. The problems, I argued, indicated that we needed more information about what constitutes a plan. Based on intuitions about plans, I introduced the concept of *director*, the entity who is committed to seeing the plan realized, and is able to make it come about. I argued that futurates presuppose that an entity *d* directs a proposition *p*, and assert that *d* is committed to *p*.

One consequence of this approach is that much of the meaning falls out from our real-world intuitions about plans. Since these intuitions led us to a modal semantics, complete with ordering sources and *ceteris paribus* conditions, an obvious further question is whether the modality in progressive futurates can be assimilated to the modality in progressives that are non-futurates. Progressive achievements (Rothstein, 2000) further complicate the question; they alone have future orientation in the absence of a flavor of planning, as the contrast in (32) demonstrates.

- (32) a. The sun is rising soon.
b. # It is raining soon.

Should (32a) cause us to abandon the preceding discussion of plans in futurates? I think it should not. Instead it should make us wonder what the differences and similarities are between plans, which have to do with an animate entity's force of will, and natural forces, which cause the sun to rise or rain to fall. Since real-world considerations have already entered into the discussion, perhaps a greater understanding of the facts about natural forces might help provide an explanation for the contrast in (32).

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Department of Linguistics
 University of Southern California
 3601 Watt Way
 Grace Ford Salvatori Hall 301
 Los Angeles, CA 90089-1693
 copley@usc.edu